

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on PTO form 892 or listed on PTO form 1449, they have not been considered.

### ***EXAMINER'S AMENDMENT***

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in an email communication with Holger Norenberg on March 18, 2010.

The examiner's amendment corrects some objections to the Claims and abstract as follows:

- 1) Please remove "Suggested drawing: Figure 4" from abstract.
- 2) Each of claims 2-4, 9-14, 16, 17, 19, 20, 22-26, 29-33, 35, 51-54 and 56-62, line 1, change the status identifier "ORIGINAL" into --(ORIGINAL)-- respectively.

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3) Each of claims 36-40, 42-45 and 47-49, line 1, change the status identifier "CANCELED" into --(CANCELED)-- respectively.

4) Replace claims 1, 5-8, 15, 18, 21, 27, 28, 34, 41, 46, 50 and 55 with the followings:

--1. (CURRENTLY AMENDED) A method of measuring the rate of permeation of gases or vapours or mixtures thereof through a test sample comprising:

providing an amount of gas or vapour in a gas container at a certain vapour or gas pressure;

arranging the container containing the gas or vapour in a vacuum chamber, which is under vacuum such that the gas or vapour permeating from the container through the test sample communicates with the vacuum chamber under vacuum;

providing a means to change the relative position between the gas container with the test sample and ~~the~~ a mass spectrometer for position resolved measurement of permeation;

using a mass spectrometer to detect the partial pressure of the gas or vapour after permeation through the test sample; and

estimating the rate of permeation from the signal measured by ~~the~~ a mass spectrometer. –

--5. (CURRENTLY AMENDED) The method as claimed in claim 2 wherein the test sample is sealed to the gas container by pressing the test sample against a sealing face of the gas container with or without using a gasket. –

--6. (CURRENTLY AMENDED) The method as claimed in claim 2 wherein the test sample is sealed to the gas container by an adhesive. –

--7. (CURRENTLY AMENDED) The method as claimed in claim 2 wherein the test sample is a film<sub>1</sub> –

--8. (CURRENTLY AMENDED) The method as claimed in claim 1 where the gas container is filled with gas or vapour inside a vacuum chamber<sub>1</sub> –

--15. (CURRENTLY AMENDED) The method according to claim 14 where the partial pressure measured from the reference samples is used for calibration<sub>1</sub> –

--18. (CURRENTLY AMENDED) A method of measuring the rate of permeation of water vapour through a test sample comprising:

providing an amount of water vapour in a container at a certain relative humidity;

arranging the container containing the water vapour in a vacuum chamber under vacuum such that the water vapour permeating through the test sample communicates with the vacuum chamber under vacuum<sub>1</sub>

using a mass spectrometer to detect the partial pressure of the water vapour after permeation of the water vapour through the test sample;

providing a means to change the relative position between gas container with test sample and ~~the~~ a mass spectrometer; and

deriving the rate of water vapour permeation from the signal measured by ~~the~~ a mass spectrometer<sub>1</sub>--

--21. (CURRENTLY AMENDED) The method as claimed in claim 19 wherein the test sample is a film<sub>1</sub> –

--27. (CURRENTLY AMENDED) The method as claimed in claim 18 where the temperature of the gas container with the test sample is changed by cooling or heating<sub>1</sub>--

--28. (CURRENTLY AMENDED) The method as claimed in claim 19 wherein the test sample is made of a polymer, a metal, a ceramic, a biological material or a combination thereof.--

--34. (CURRENTLY AMENDED) The method as claimed in claim 18 where the signal to noise ratio of the signal detected by the mass spectrometer is ~~reduced~~ improved by choosing a suitable isotope from  $D_2^{16}O$ ,  $D_2^{17}O$ ,  $D_2^{18}O$ ,  $H_2^{16}O$ ,  $H_2^{17}O$ , and  $H_2^{18}O$ --

-- 41. (CURRENTLY AMENDED) The method according to ~~claim 36~~ claim 1 where the gas container has a movable part for changing the internal volume of the gas container.--

--46. (CURRENTLY AMENDED) A method ~~according to claim 42~~ for position-resolved permeation measurements at different locations on the test sample comprising: providing an amount of gas or vapour in a gas container at a certain vapour or gas pressure; arranging the container containing the gas or vapour in a vacuum chamber, which is under vacuum such that the gas or vapour permeating from the container through the test sample communicates with the vacuum chamber under vacuum; positioning the test sample close to an enclosure housing a mass spectrometer, where the enclosure has a conical bottom with a hole and a tube attached to the hole; providing a means to change the relative position between the gas container with the test sample and a mass spectrometer in an enclosure for position resolved measurement of permeation; using a mass spectrometer to detect the partial pressure of the gas or vapour after permeation through the test sample; and estimating the rate of permeation position-resolved from the signal measured by a mass spectrometer.--

--50. (CURRENTLY AMENDED) An apparatus for measuring the rate of permeation of a gas or vapour (~~including water vapour~~) including water vapour consisting of:

one or more vacuum chambers,  
a gas container which is removable from the vacuum system,  
a filling facility,  
a mass spectrometer for partial pressure measurement,  
a means for changing the relative positions of mass spectrometer and test sample and  
a means of transferring the gas container with the test sample.—

--55. (CURRENTLY AMENDED) The apparatus according to claim 50 where the test sample is clamped or glued to the gas container.--

***Allowable Subject Matter***

3. Claims 1-35, 41, 46 and 50-62 are allowed.

***Reasons for Allowance***

4. The following is an examiner's statement of reasons for allowance:

Please see Office Action mailed 08/11/2005 and Applicant's response received 12/05/2005 for reasons for allowance.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Contact Information***

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5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xiuqin Sun whose telephone number is (571)272-2280.

The examiner can normally be reached on 6:30am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on (571)272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/X. S./

Examiner, Art Unit 2863

/Tung S. Lau/

Primary Examiner, Art Unit 2863

April 9, 2010